"COGNITIVE BEHAVIOR THERAPY ON MEMORY, BEHAVIORAL PROBLEMS, ACTIVITIES OF DAILY LIVING AND QUALITY OF LIFE AMONG ELDERLY WITH COGNITIVE IMPAIRMENT"

SYNOPSIS

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I	Research Methodology exam pass certificate
II	Research Methodology course completion certificate
III	Training Certificate
IV	IEC certificate
V	Certificate of oral Presentation
VI	Published article/Research visibility

CHAPTER - I

INTRODUCTION

"Beautiful young people are accidents of nature,

but beautiful old people are works of art"

1.1 BACKGROUND OF THE STUDY

Ageing is a process that accumulates changes in organisms or object overtime. Human aging process involves multidimensional changes on physical, psychological, cultural and social levels. Ageing is a progressive and generalized impairment of body functions resulting in, loss of adaptive responses to stress and increasing the risk of age – related diseases. People more than 60 years are considered elderly. Old age is not a disease but a normal and inevitable biological phenomenon. The most common health problems due to aging process are change in mental outlook, senile cataract, nerve deafness, failure in special senses, degenerative disorder, cancer, accidents and mental changes are impaired memory, depression, anxiety, fear, lack of self - confidence, and even suicide.

Nearly half of community – dwelling persons aged 60 years and older express concern about declining cognitive abilities. Mild to moderate cognitive impairment described as a set of

symptoms rather than a specific disease. A person with mild cognitive impairment has mild problem with one or more of the following: memory, reasoning, attention, language and perception. Persons with mild cognitive impairment have mild problems in performing complex functional tasks which they used to perform day to day activities. They may take more time and make more errors at performing the activities of daily living. It is evident that maintenance of cognitive function during old age period is very difficult to perform the activities and maintain the quality of life.

GLOBAL:

World Health Organization (2017) report stated that the number of people 60 years older will grow by 56% from 962 million (2017) to 1.4 billion (2030). By 2050, the global population of elderly people will more than double to 2.1 billion.

INDIA:

Population Census (2021) reported that there are nearly 138 million elderly person (aged 60 years or above) in India; 71 million are females and 67 million are males. An increase of nearly 34 million elderly persons was seen in 2021 over the population census of 2011.

STATE:

Population Census (2021) reported that Kerala has maximum proportion of elderly people in its population (16.5%) followed by Tamil Nadu (13.6%), Himachal Pradesh (13.1%), Punjab (12.6%) and Andhra Pradesh (12.4%). As per the data released by the Government of India, the elderly population in Tamil Nadu witnessed a significant increase from 75.10 lakhs in 2011 to 1.0 crore in 2021. Consequently, Tamil Nadu is projected to have the second highest proportion of elderly population among all the states.

NOVELTY OF THE STUDY

Various studies have been done globally and nationally on Cognitive Behavior Therapy among elderly. However very few studies are focused on Cognitive Behavior therapy on level of memory impairment among elderly with cognitive impairment. So, the proposed research aims to improve the level of memory, activities of daily living, quality of life and reduce the behavior problems of elderly with cognitive impairment through Cognitive Behavior Therapy.

1.2. AIM

To examine the effectiveness of cognitive behavior therapy on memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment"

1.3. OBJECTIVES

- To assess the prevalence of cognitive impairment among elderly.
- To assess and compare the pre and post - test level of memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment in study and control group.
- To evaluate the effectiveness of cognitive behavior therapy on memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment.
- To find out the relationship between the memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment.
- To find out the association of post - test level of memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment with their selected demographic variables.

1.4. OPERATIONAL DEFINITION

EFFECTIVENESS:

Refers to outcome of cognitive behavior therapy on memory, behavioral problems, activities of daily living and quality of life which was assessed by PGI Memory scale, Pittsburgh Agitation Scale, The Bristol Activities of daily Living Scale and WHOQOL BREF scale – QOL with the time interval of 8 weeks and 16 weeks.

COGNITIVE BEHAVIOR THERAPY:

Cognitive Behavioral Therapy used in this study is the modified version based on the needs of the elderly people with cognitive impairment. The modified interventions offer a wide range of enjoyable activities which improve the level of memory, enhance the activities of daily living and reduce the level of behavioral problems thereby improving the quality of life of the elderly with cognitive impairment.

The therapy consists of group of activities which covers all the parameters such as memory, behavioral problems & activities of daily living. The investigator gave all the activities in a structured way to each elderly with cognitive impairment.

These activities have been divided and scheduled for 2 months (8 weeks) and given biweekly for 40 minutes and each activity lasts for 10-20 minutes. Reinforcement was given by the researcher for the period of 2 months and log book was maintained in the old-age home under the supervision of old- age home caretaker.

Week	Timings	Memory (10 mins)	Behavioral Problems (20 mins)	Activities of daily living (10 mins)
Week 1	40 mins	Matching related objects	Mindfulness meditation	Gardening
Week 2	40 mins	Deductive Reasoning	Mindfulness Breathing	Coloring Pictures
Week 3	40 mins	Work with money	Mindfulness coloring	Chair exercises
Week 4	40 mins	Matching Color	Mindfulness eating	Art & crafts activities
Week 5	40 mins	Recalling Coins	Mindfulness listening	Indoor Walking
Week 6	40 mins	Puzzles	Mindfulness movements	Search & Find
Week 7	40 mins	Recalling story	Body Scan	Sequencing activities
Week 8	40 mins	Memory maze	Mindfulness Observation	Playing cards

MEMORY PROBLEMS:

Refers to unusual forgetfulness. The person may not be able to remember new events, recall one or more memories of the past or both which will be assessed by **PGI Memory Scale.**

BEHAVIORAL PROBLEMS:

Refers to agitation termed as behavior that indicates severe emotional distress (e.g., irritability, rapid changes in mood), excessive motor activity (e.g., pacing, rocking, restlessness), physical aggression (e.g., pushing, hitting, kicking), and verbal aggression (e.g., shouting, cursing, yelling) which will be assessed by **Pittsburgh Agitation Scale.**

ACTIVITIES OF DAILY LIVING:

Refers to a series of basic or routine activities performed by individuals on a daily basis in order to take care of ourselves and assist with independent living which will be

assessed by **Bristol Activities of Daily Living Scale.**

QUALITY OF LIFE:

Refers to the general well-being in physical and psychological health, social relationship and environment of elderly with cognitive impairment which will be assessed by **WHO QOL BREF scale.**

ELDERLY WITH COGNITIVE IMPAIRMENT:

Refers to the persons who are above the age of 60 years identified as mild and moderate cognitive impairment by **Montreal Cognitive Assessment (MoCA).**

1.3 NULL HYPOTHESES

- **NH_1:** There is no significant effect of cognitive behavior therapy on memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment.
- **NH_2***:* There is no significant relationship between the memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment.
- **NH_3:** There is no significant association of selected demographic variables with post-test level on memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment.

1.6 ASSUMPTIONS

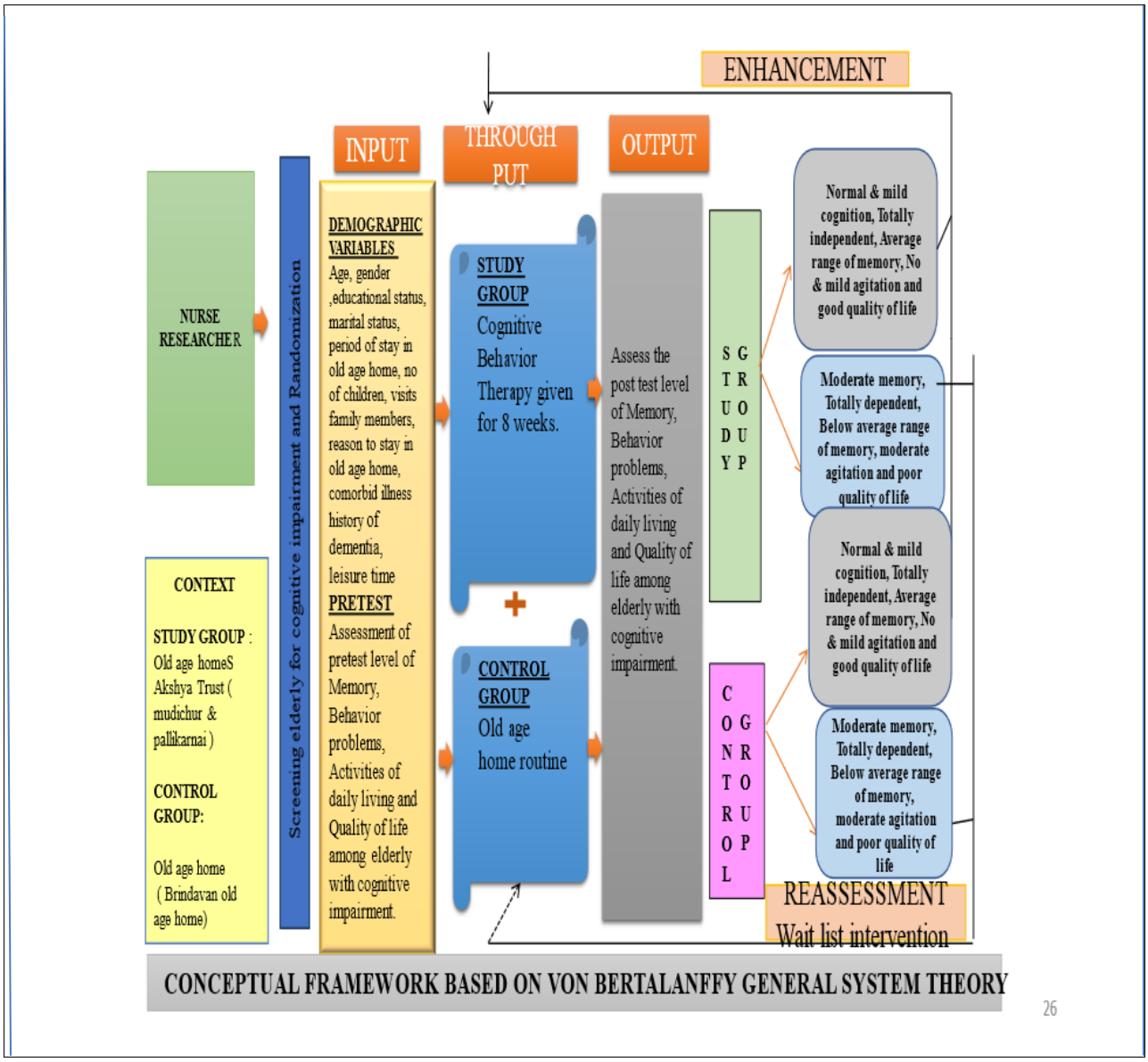
The researcher assumed that –

- ✓ Elderly people may have cognitive impairment due to aging process.
- ✓ Cognitive Behavior Therapy may enhance the cognitive functions.
- ✓ Cognitive impairment may result in poor quality of life.
- ✓ Cognitive Behavior Therapy may improve the quality of life & well- being.

1.7 DELIMITATIONS

- ➢ The study was limited to 140 elderly people.
- ➢ The study was limited to elderly people residing in selected old age home in Chengalpattu.
- ➢ The study was limited elderly with mild and moderate cognitive impairment.

CONCEPTUAL FRAME WORK BASED ON VON BERTALANFFY GENERAL SYSTEM THEORY


ENHANCEMENT
INPUT
THROUGH PUT
OUTPUT
NURSE RESEARCHER
Screening elderly for cognitive impairment and Randomization
DEMOGRAPHIC VARIABLES
Age, gender ,educational status, marital status, period of stay in old age home, no of children, visits family members, reason to stay in old age home, comorbid illness history of dementia, leisure time
PRETEST
Assessment of pretest level of Memory, Behavior problems, Activities of daily living and Quality of life among elderly with cognitive impairment.
STUDY GROUP
Cognitive Behavior Therapy given for 8 weeks.
CONTROL GROUP
Old age home routine
Assess the post test level of Memory, Behavior problems, Activities of daily living and Quality of life among elderly with cognitive impairment.
STUDY GROUP
CONTROL GROUP
Normal & mild cognition, Totally independent, Average range of memory, No & mild agitation and good quality of life
Moderate memory, Totally dependent, Below average range of memory, moderate agitation and poor quality of life
Normal & mild cognition, Totally independent, Average range of memory, No & mild agitation and good quality of life
Moderate memory, Totally dependent, Below average range of memory, moderate agitation and poor quality of life
REASSESSMENT
Wait list intervention
CONTEXT
STUDY GROUP : Old age homeS Akshya Trust (mudichur & pallikarnai)
CONTROL GROUP:
Old age home (Brindavan old age home)
CONCEPTUAL FRAMEWORK BASED ON VON BERTALANFFY GENERAL SYSTEM THEORY
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CHAPTER - II

REVIEW OF THE LITERATURE

The review of the literature is organized under the following sections.

Section I: Literature related to prevalence of cognitive impairment among elderly.

Khanna AB, Chandra MS (2020) conducted a cross-sectional study on prevalence of cognitive impairment among 770 elderly aged ≥60 years residing in two Urban Health Centers of Belagavi District. 770 elderly were selected for the study**.** Socio-demographic profile of the participant was collected using a predesigned and pretested questionnaire by personal interview at the participants' residence. To assess the CI and burden of healthcare, Mini Mental State Examination and Zarit Caregiver Burden Scale were used, respectively. Results revealed that 555 (72.1%) were between 60 and 70 years of age, followed by 71 and 80 years accounted for 174 (22.6%), and 41 (5.3%) were above 80 years of age. The overall prevalence of CI was 8.4% in our study. Among them 51 (6.6%) had mild CI, 14 (1.8%) had moderate CI, and none had severe CI. The risk factors noted for CI were advancing age, female sex, unmarried or widow/widower, illiterate, not working presently, staying alone, and poverty. Out of 65 caregivers, 67.7% of them had mild or moderate burden of caring for the cognitively impaired elderly**.**

Section II: Literature related to level of memory among elderly with cognitive impairment.

Ghassan Ibraham, Fatima Kuriet (2024) conducted a descriptive cross- sectional study on the level of memory among elderly with cognitive impairment residing in nursing homes in Lattakia City. 40 elderly people were selected randomization from the elderly in nursing homes. The data was collected using a two- part tool, demographic data sheet and PGI Memory scale. The results revealed that more than half of the elderly had a weak level of memory and statistically significant relationship was found between the level of memory and age among elderly individuals.

Section III: Literature related to behavioural problems among elderly with cognitive impairment.

Jiaxin Liu, Taoyu Lin, Guanjun Liu, Xiaoxin Dong, Rui Min (2023) conducted a cross-sectional study of home-cared older adults with dementia in Ningbo, China, using 2020 data. Researcher use a self-made questionnaire to investigate the risks of agitated behaviour and its related factors. 640 older Chinese adults participated in the study. Results revealed that 42.8% of the sample exhibits one or more agitated behaviours.

Section IV: Literature related to activities of daily living among elderly with cognitive impairment.

Chauhan S, Kumar S (2022) conducted a longitudinal study to assess the prevalence of Activity of Daily Living (ADL) and Instrumental Activity of Daily Living (IADL) among elderly aged 60 and over living in India. The study utilized the Longitudinal Ageing Study in India (LASI, 2017–18) data, and information was sought from 31,464 elderly aged 60 years and above. An index of ADL and IADL was created on a scale of three levels, exhibiting no, moderate, or severe levels of ADL/IADL disability. Results revealed that around 3% of the elderly reported severe ADL disability, and 6% elderly reported severe IADL disability. Elderly who were not involved in any physical activity than their counterparts were more likely to report severe ADL (RRR = 2.68, C.I. = 1.66–4.32) and severe IADL (RRR = 2.70, C.I. = 1.98–3.67) than no ADL and no IADL, respectively.

Section V: Literature related to quality of life among elderly with cognitive impairment.

Khan FM, Fatima M, Qasim SM, Khan JT, Saeed A, Shamsi RF (2023) conducted a descriptive cross-sectional comparative study to determine the association of quality of life and mild cognitive impairment in geriatric population. The data was collected using Memory Symptom Assessment Scale-Short Form (MSAS-SF) and Quality of life-Alzheimer Disease (QOL-AD) during a time period of six months from 300 individuals aged between 55-85years. Results revealed that MSAD-SF and QOL-AD showed a significant decline of QOL in individuals with mild cognitive impairment. MSAS-SF and QOL-AD had the significant association with pain, lack of energy, difficulty sleeping, problems with urination, lack of appetite, dizziness, feeling sad, worrying, feeling irritable, memory, ability to do chores around the house, physical health, self as a whole and ability to do things for fun (p-value <0.05). Domains in both questionnaires indicated a decline in QOL with significant p-values of <0.05. The study concluded that elderly who had higher impairment level had lower quality of life in multiple domains.

Section VI: Literature related to cognitive behavioural therapy among elderly with cognitive impairment.

AnQ, Wang K, Sun F, Zhang A (2020) conducted a randomized controlled trial regarding effectiveness of a modified group cognitive behavioral therapy (CBT) on dementia worry among Chinese older adults. Eighty-two older adults recruited from four elder group homes were randomly assigned to either intervention or control group. The intervention group (n= 44) received eight weekly 60-minute face-to-face CBT, while the control group (n=38) received treatment-as-usual. Results revealed that the modified group CBT has significantly reduced dementia worry and culturally biased beliefs about dementia (p<.001). Study findings supported both statistically and clinically significant effect of modified group CBT on dementia worry

RESEARCH GAP

Various studies have been done on CBT on depression, anxiety and stress but there is limited research on the effectiveness of CBT on memory, behavioural problems and activities of daily living.

CHAPTER - III

RESEARCH METHODOLOGY

3.1 RESEARCH APPROACH

Quantitative research approach

3.2 RESEARCH DESIGN

True experimental research design

3.3 RESEARCH VARIABLES

- **Independent variable:** Cognitive behavior therapy.
- **Dependent variable:** Memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment.
- **Demographic variables:** Age, Gender, Educational status, previous occupational status, marital status, period of stay in old age home, number of children, visits of family members, reason to stay in old age home, co morbid illness, family history of dementia and leisure time activities.
- **Matching Variable:** Level of cognitive impairment.

3.4 RESEARCH SETTING

The study was conducted at selected old age homes at Chengalpattu District.

Akshaya Trust Old age home (Mudichur -35 Inmates & Pallikarnai Branch – 35 Inmates) –study group and Brindavan Old age Home (70 Inmates) – Control group

3.5 POPULATION

TARGET POPULATION: All the elderly above the age group of 60- 80 years with mild and moderate cognitive impairment.

ACCESSIBLE POPULATION: All the elderly above the age group of 60 – 80 years with mild and moderate cognitive impairment at selected old age homes in Chengalpattu district.

SAMPLE: Elderly above the age group of 60 -80 years with mild and moderate cognitive impairment who were fulfilling the sample selection criteria.

3.6 SAMPLING TECHNIQUE:

Simple Random Sampling Technique (Lottery method) was used to allocate the old age home into experimental and control group. **Simple Random Sampling Technique (Random Table)** was used to select the elderly with cognitive impairment for the experimental and control group.

3.7 SAMPLE SIZE: 140 elderly people; 70 in experimental group and 70 in control group.

3.8 SAMPLING CRITERIA

INCLUSION CRITERIA

- Elderly who were
  - ✓ in the age group of 60 – 80 years with mild and moderate cognitive impairment.
  - ✓ able to follow the instructions.

- ✓ willing to participate in the study.
- ✓ able to understand Tamil and English.

EXCLUSION CRITERIA

- ❖ Elderly who were
  - ✓ having physical illness like delirium, dementia and Alzheimer's disease.
  - ✓ having sensory impairment like total blind and total deafness
  - ✓ taking medications for memory and behavioral problems.
  - ✓ critically ill
  - ✓ diagnosed with psychiatric disorders.

3.9 DEVELOPMENT & DESCRIPTION OF THE TOOL

With extensive review of literature and consultation with experts' opinion, previous knowledge and internet search, the tool was constructed to generate the data. The tool for the data collection consisted of two parts.

Part A -Data collection tool

Part B -Intervention tool.

PART A: DATA COLLECTION TOOL

The data collection tools used for the study included six sections:

Section A: Assessment of Demographic variables of elderly with cognitive impairment.

This section deals with demographic variables of elderly with cognitive impairment such as age, gender, educational status, previous occupational status, marital status, period of stay in old age home, no of children, no of visits by family members, reason to stay in old age home, History of co-morbid illness, family history of dementia and leisure time activities.

Section B: Assessment of Montreal Cognitive Assessment (MoCA) among elderly with cognitive impairment.

This section consist of Montreal Cognitive Assessment is a screening tool for individual with cognitive impairment. It was developed by Nasiruddin in Montreal, Quebec in 2002. It consists of 8 components to assess the cognitive functions such as: attention and concentration, executive functions, memory, language, visuo- constructional skills, conceptual thinking, calculations, and orientation.

Scoring & Interpretation:

Score ranges between 0 and 30. Scores of 26 and above is considered as normal.

SCORE	LEVEL OF COGNITIVE IMPAIRMENT
26 - 30	Normal cognition
18 - 25	Mild Cognitive Impairment
10 - 17	Moderate Cognitive Impairment
< 10	Severe Cognitive Impairment

Section C: Assessment of Demographic variables of elderly with cognitive impairment.

This section consists of PGI Memory scale and it was developed by Dwarka Prasad and N.N Wig in 1977. It is a standardized scale to assess the individual memory. It consists of 35 items in 10 sections.

Scoring & Interpretation:

Scoring	Interpretation
20 - 40	Below average
41 - 60	Average
61 - 80	Above average
80 - 100	Very good

Section D: Assessment of Behavioral problems (agitation) by Agitated behavior scale (ABS).

It is a clinical rating scale consisting of 14 item and each item rated from 1 (absent) to 4 (present to an extreme degree). At the end of the observation period, the scores are added, with "absent corresponding to 1 point, "present to a slight degree to 2 points", "present to a moderate degree to 3 points, "present to extreme degree to 4 points".

SCORING & INTERPRETATION:

SCORING	INTERPRETATION
36 or higher	Severe agitation
29 to 35	Moderate agitation
22 to 28	Mild agitation
Less than 22	No significant agitation

Section E: Assessment of Activities of Daily Living by Bristol activities of daily livingamong elderly with cognitive impairment.

Bristol activities of daily living

It is a 20- item questionnaire designed to measure the ability of someone with dementia to carry out daily activities such asdressing, preparing food and using transport, etc. It covers both basic and instrumental activities of daily living. Items are rated on four- point scale (from totally dependent to totally independent, with an additional "not applicable" option).

SCORING & INTERPRETATION:

SCORE	LEVEL OF DEPENDENCE
41-60	Totally dependent
21-40	Partially dependent
0 - 20	Totally independent

SECTION F: Assessment of Quality of Life by WHOQOL BREF scale among elderly with cognitive impairment.

The WHOQOL BREF Scale consists of 26 items instrument consisting of four domains such as:

DOMAINS	ITEMS
Physical Health	7 items
Psychological Health	6 items
Social Relationship	3 items
Environmental Health	8 items
General health & quality of life	2 items

Each item of the WHOQOL BREF is scored from 1 to 5 on a response scale, which is stipulated as a 5- point -likert scale.

Scoring & Interpretation

After getting the individual score then it has to be converted as a transformed score. The first transformation method converts scores to range between 4-20; the second score transformationmethod converts domain scores to 0-100.

PERCENTAGE	CATEGORY
< 33.3	Poor
33.4 - 66.6	Average
66.7 - 99.9	Good

PART B: INTERVENTION TOOL- COGNITIVE BEHAVIOR THERAPY

3.10 VALIDITY OF THE TOOL

The study was discussed in the research advisory committee and approved. The suggestions were incorporated and later sent for validation from external experts. The validity of the tool was obtained from 2 Psychiatrists, 6 Nursing Experts in the field of Psychiatric nursing, 2 Clinical Psychologists. Suggestions given by the experts and it was incorporated in the main study and the tools was finalized.

3.11 RELIABILITY OF THE TOOL

The instruments used in the study were more standardized and widely used in many types of research.

Variables	Tool	Reliability
Elderly with cognitive impairment	Montreal Cognitive Assessment (MoCA)	"r" value = 0.92 Highly Reliable
Memory	PGI Memory Scale	"r" value = 0.91 Split half method Highly reliable
Behavioural Problems	Pittsburgh Agitation Scale	"r" value = 0.80 Inter – rater reliability Highly Reliable
Activities of daily living	Bristol Activities of daily living	"r" value = 0.80 Test – retest method Reliable
Quality of life	WHOQOL BREF SCALE	"r" value = 0.91 Test – retest method Reliable

3.12 PILOT STUDY

The pilot study was conducted in Appa Amma old age home at Vandalur and Bethesda old age home at Navalur. After ensuring the validity and reliability of the tool, the study was conducted among 30 elderly with cognitive impairment (15 experimental and 15 control group) during July 2023 to Dec 2023. The tool was found feasible and appropriate.

3.13 DATA COLLECTION PROCEDURE

- The investigator obtained a formal ethical approval from Sri Balaji Vidyapeeth University which is the official ethics review board of Shri Sathya Sai Medical College & Hospital. The data collection setting permission was obtained from the directors of old-age home. After the brief introduction about self and the purpose of the study, the data collection for each sample was started. Researcher obtained written informed consent from the elderly with cognitive impairment.
- Researcher screened the elderly for cognitive impairment by Montreal Cognitive Assessment Scale. Elderly in the experimental and control group were pair matched based on level of cognitive impairment. Based on simple random sampling technique (lottery method) was used to allocate the old-age home and simple random sampling technique (Random Table) was used to select the elderly with cognitive impairment for the experimental and control group. Researcher collected the demographic variables of the 144 elderly with cognitive impairment and assessed the level of memory, behavior problems, activities of daily living and quality of life among elderly with cognitive impairment by PGI memory scale, Pittsburgh agitation scale, Bristol activities of daily living and WHO Quality of Life BREF Scale.
- Elderly with cognitive impairment (n=70) in experimental group received cognitive behavior therapy for 8 weeks. CBT consists of group of activities which covers all the parameters such as memory, behavioral problems, activities of daily living and quality of life. The investigator gave all the activities in a structured way to each elderly with cognitive impairment. These activities have been divided and scheduled for 2 months (8 weeks) biweekly for 40 minutes and each activity lasts for 10-20 minutes. Reinforcement was given by the researcher for the period of 2 months and log book was maintained in the old-age home under the supervision of old- age home caretaker.

3.14 DROP OUT ANALYSIS

S.No	Content	Study Group		Control group	
		n	%	n	%
1	No of Dropout	2	1.8	2	1.8

3.15 ETHICAL CONSIDERATION

- IEC Approval NO: SSSMCRI IHEC/2020/608 Dated: 15.7.2020
- All ethical considerations for the participants were ensured
- Participants were given rights to withdraw from the study at anytime
- Participants confidentiality was ensured
- Written informed consent was obtained from the participants
- Control group was provided with video demonstration on cognitive behavior therapy.

SCHEMATIC REPRESENTATION OF THE RESEARCH METHODOLOGY

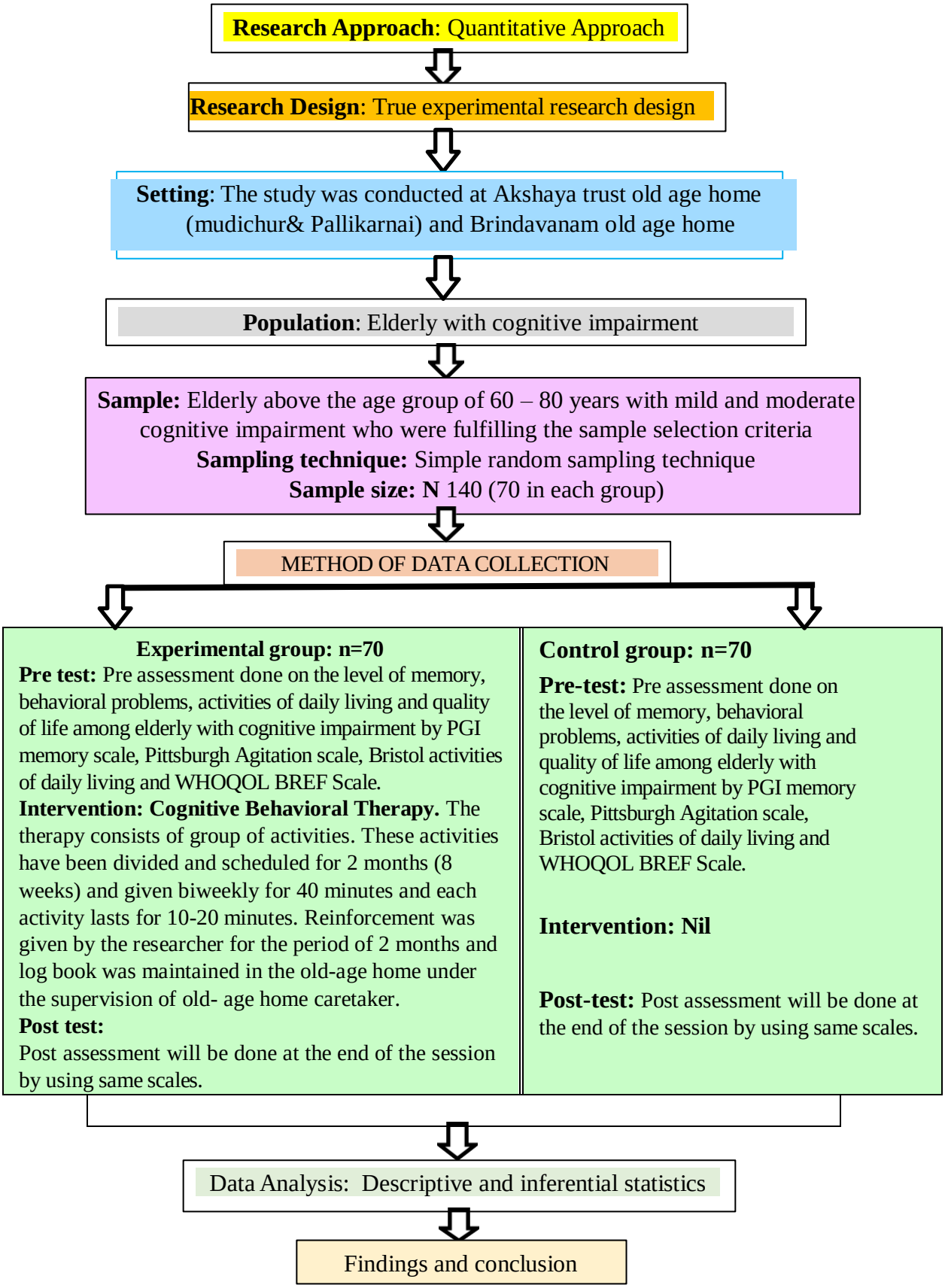
Research Approach: Quantitative Approach
Research Design: True experimental research design
Setting: The study was conducted at Akshaya trust old age home (mudichur& Pallikarnai) and Brindavanam old age home
Population: Elderly with cognitive impairment
Sample: Elderly above the age group of 60 – 80 years with mild and moderate cognitive impairment who were fulfilling the sample selection criteria
Sampling technique: Simple random sampling technique
Sample size: N 140 (70 in each group)
METHOD OF DATA COLLECTION
Experimental group: n=70
Pre test: Pre assessment done on the level of memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment by PGI memory scale, Pittsburgh Agitation scale, Bristol activities of daily living and WHOQOL BREF Scale.
Intervention: Cognitive Behavioral Therapy. The therapy consists of group of activities. These activities have been divided and scheduled for 2 months (8 weeks) and given biweekly for 40 minutes and each activity lasts for 10-20 minutes. Reinforcement was given by the researcher for the period of 2 months and log book was maintained in the old-age home under the supervision of old- age home caretaker.
Post test:
Post assessment will be done at the end of the session by using same scales.
Control group: n=70
Pre-test: Pre assessment done on the level of memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment by PGI memory scale, Pittsburgh Agitation scale, Bristol activities of daily living and WHOQOL BREF Scale.
Intervention: Nil
Post-test: Post assessment will be done at the end of the session by using same scales.
Data Analysis: Descriptive and inferential statistics
Findings and conclusion

Fig 2: Schematic Representation of the Research Methodology

CHAPTER - IV

DATA ANALYSIS & INTERPRETATION

Data collected was analyzed using IBM (International Business Machines Corporation) "Statistical Package for Social Sciences" (SPSS) software version 25.0. Data was organized, tabulated and analysed according to the objectives and findings based on descriptive and inferential statistical analysis were presented under the following sections:

SECTION 4.1: Frequency and Percentage distribution of demographic variables of elderly with cognitive impairment.

The frequency and percentage distribution of demographic variables of the elderly with cognitive impairment in the study and control group. 29(41.4%) and 27(38.6%) of them were in the age group of 66-70 years, 37(52.9%) and 39(55.7%) of them were female in study and control group. In regard to education, 27(38.6%) were completed middle school in study group whereas 25(35.7%) of them completed primary school in control group. With regard to occupational status, 24(34.3%) of them were unemployed in study group whereas 21(30%) of them were performed skilled work. 24(34.3%) and 22(31.4%) of elderly were single/unmarried, 38(54.3%) and 34(48.6%) of them were staying at old age home for last 3 years, 25(35.7%) and 23(32.9%) of them were visited by their family members once a year in both the study and control group. 28(40%) in study group had one child whereas 25(35.7%) of them had no children in control group.

In regard to reason to stay in old age home, 43(61.4%) and 37(52.9%) of them were insisted to stay in old age home by their children in both the groups. 62(88.6%) and 59(84.3%) in both the group had history of comorbid illness, 70(100%) of them had no history of dementia and 70(100%) of them were reading newspaper as a leisure time activity in both study and control group.

The chi-square analysis of each demographic variable revealed that there was no significant difference between the study and control group.

SECTION 4.2: ASSESSMENT OF PREVALENCE OF COGNITIVE IMPAIRMENT AMONG ELDERLY

Objective 1: Frequency and percentage distribution of cognitive impairment among elderly.

The present study shows that, out of 290 elderly 7(4.8%) elderly had normal cognition, 160 (55.17%) had mild cognitive impairment, 114 (78%) had moderate cognitive impairment and 9 (6.2%) had severe cognitive impairment. In study group 2% had normal cognitive impairment, 50% had mild cognitive impairment, 46% had moderate cognitive impairment, 2% had severe cognitive impairment whereas in control group 2.8% had normal cognition, 61% had mild cognitive impairment, 32.3% had moderate cognitive impairment, 4.2% had severe cognitive impairment

SECTION 4.3: ASSESSMENT AND COMPARISION THE PRE AND POST-TEST LEVEL OF MEMORY, BEHAVIOURAL PROBLEMS, ACTIVITIES OF DAILY LIVING AND QUALITY OF LIFE AMONG ELDERLY WITH COGNITIVE IMPAIRMENT IN STUDY AND CONTROL GROUP.

Objective 2: Assessment and comparison the pre and post-test level of memory, behavioural problems, activities of daily living and quality of life among elderly with cognitive impairment in study and control group.

Table 4.3.1 (a): Assessment of pre-test and post-test level of memory among elderly with cognitive impairment. **N=140**

Assessment	Level of Memory	Group				Chi square value
		Study (n=70)		Control (n=70)		
		n	%	n	%	
Pretest	Low	-	-	-	-	χ 2=0.036 d.f=1 p=0.850 (NS)
	Below	20	28.6	19	27.1	
	Average	50	71.4	51	72.9	
	Above average	-	-	-	-	
	Excellent	-	-	-	-	
Posttest I	Low	-	-	-	-	**χ 2=17.649 d.f=2 p=0.001 (S***)**
	Below	11	15.7	19	27.1	
	Average	44	62.9	51	72.9	
	Above average	15	21.4	0	0	
	Excellent	-	-	-	-	
Posttest II	Low	-	-	-	-	**χ 2=29.682 d.f=2 p=0.001 (S***)**
	Below	5	7.1	19	27.1	
	Average	44	62.9	51	72.9	
	Above average	21	30.0	0	0	
	Excellent	-	-	-	-	

***p<0.001, S – Significant N.S – Not Significant, p>0.05

4.3.1 (b) Comparison of pre-test, post- test 1 and post- test 2 score of PGI Mem score among elderly with cognitive impairment in the study group.

N = 70

PGI Mem	Mean	SD	Mean Difference	Paired "t" test & p-value
Pretest	45.22	8.29	**5.13**	**t=14.879 p=0.0001, S*** **
Posttest-I	50.35	9.30		
Posttest-I	50.35	9.30	**4.90**	**t=16.192 p=0.0001, S*** **
Posttest-II	55.25	8.42		
Pretest	45.22	8.29	**10.03**	**t=31.171 p=0.0001, S*** **
Posttest-II	55.25	8.42		

***p<0.001, S – Significant

Table 4.3.2(a): Assessment and comparison of pre-test and post-test level of behavioural problems among elderly with cognitive impairment.

N=140

Assessment	Level of agitation	Group				Chi square value
		Study (n=70)		Control (n=70)		
		n	%	n	%	
Pretest	No significant agitation	-	-	-	-	-
	Mild	70	100.0	70	100.0	
	Moderate	-	-	-	-	
	Severe	-	-	-	-	
	Extremely severe	-	-	-	-	
Posttest I	No significant agitation	-	-	-	-	-
	Mild	70	100.0	70	100.0	
	Moderate	-	-	-	-	
	Severe	-	-	-	-	
	Extremely severe	-	-	-	-	
Posttest II	No significant agitation	2	2.9	0	0	χ 2=2.029 df=1 p=0.154 (NS)
	Mild	68	97.1	70	100.0	
	Moderate	-	-	-	-	
	Severe	-	-	-	-	
	Extremely severe	-	-	-	-	

***p<0.001, S – Significant N.S – Not Significant, p>0.05

4.3.2(b) Comparison of pre-test, post- test 1 and post- test 2 score of Behavioral problems score among elderly with cognitive impairment in the study group.

N = 70

Behavioral Problems PAS	Mean	SD	Mean Difference	Paired "t" test & p-value
Pre-test	1.18	0.39	**0.15**	**t=3.587 p=0.001, S*** **
Post-test-I	1.03	0.17		
Post-test-I	1.03	0.17	**0.06**	**t=2.045 p=0.045, S***
Post-test-II	0.97	0.17		
Pre-test	1.18	0.39	**0.21**	**t=4.011 p=0.0001, S*** **
Post-test-II	0.97	0.17		

***p≤0.001, *p<0.05, S – Significant

Table 4.3.3(a): Assessment of pre-test and post-test level of activities of daily living among elderly with cognitive impairment.

N=140

Assessment	Level of Activities of Daily Living	Group				Chi square value
		Study (n=100)		Control (n=100)		
		n	%	n	%	
Pretest	Totally Independent	-	-	-	-	χ 2=1.723 df=1 p=0.189 (NS)
	Partially dependent	63	90.0	67	95.7	
	Totally dependent	7	10.0	3	4.3	
Posttest I	Totally Independent	3	4.3	0	0	χ 2=4.008 df=2 p=0.135 (NS)
	Partially dependent	66	94.3	67	95.7	
	Totally dependent	1	1.4	3	4.3	
Posttest II	Totally Independent	5	7.1	0	0	**χ 2=8.030 df=2 p=0.018 (S*)**
	Partially dependent	65	92.9	67	95.7	
	Totally dependent	0	0	3	4.3	

*p<0.01, S – Significant N.S – Not Significant, p>0.05

Table 4.3.3(b): Comparison of pre-test, post- test 1 and post- test 2 score of BADL score among elderly with cognitive impairment in the study group.

N = 70

BADL	Mean	SD	Mean Difference	Paired "t" test & p-value
Pretest	35.03	3.52	**2.52**	**t=5.635 p=0.0001, S*****
Posttest-I	32.51	4.74		
Posttest-I	32.51	4.74	**2.71**	**t=5.180 p=0.0001, S*****
Posttest-II	29.80	5.61		
Pretest	35.03	3.52	**5.23**	**t=9.752 p=0.0001, S*****
Posttest-II	29.80	5.61		

***p<0.001, S – Significant

Table 4.3.4 (a): Assessment of pre-test and post-test level of quality of life among elderly with cognitive impairment.

N=140

Assessment	Level of QoL	Group				Chi square value
		Study (n=70)		Control (n=70)		
		n	%	n	%	
Pre-test	Poor (<33.33)	-	-	-	-	-
	Average (33.4 – 66.6)	70	100.0	70	100.0	
	Good (66.7 – 99.9)	-	-	-	-	
Post-test -I	Poor (<33.33)	-	-	-	-	**χ 2=54.422 df=1 p=0.001 (S***)**
	Average (33.4 – 66.6)	29	41.4	69	98.6	
	Good (66.7 – 99.9)	41	58.6	1	1.4	
Post-test II	Poor (<33.33)	-	-	-	-	**χ 2=98.117 df=1 p=0.001 (S***)**
	Average (33.4 – 66.6)	11	15.7	69	98.6	
	Good (66.7 – 99.9)	59	84.3	1	1.4	

*p<0.01, S – Significant N.S – Not Significant, p>0.05

4.3.4 (b): Comparison of pre-test, post -test 1 and post- test 2 score of Quality-of-Life score among elderly with cognitive impairment in the study group.

N = 70

QoL	Mean	SD	Mean Difference	Paired "t" test & p-value
Pretest	62.27	2.99	**3.10**	**t=5.203 p=0.0001, S*** **
Posttest-I	65.37	5.16		
Posttest-I	65.37	5.16	**4.14**	**t=5.502 p=0.0001, S*** **
Posttest-II	69.51	5.89		
Pretest	62.27	2.99	**7.24**	**t=10.629 p=0.0001, S*** **
Posttest-II	69.51	5.89		

***p<0.001, S – Significant

Table 4.3.1 (a), 4.3.1 (b), 4.3.2 (a), 4.3.2 (b), 4.3.3 (a), 4.3.3 (b), 4.3.4 (a), 4.3.4 (b) shows the assessment and comparison of pre-test and post-test I, post-test II level of memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment. The Chi – square and paired "t" test results showed highly significant difference between pre- test and post- test level I & II between the groups.

SECTION 4.4 EFFECTIVENESS OF COGNITIVE BEHAVIOUR THERAPY ON LEVEL OF MEMORY, BEHAVIOUR PROBLEMS, ACTIVITIES OF DAILY LIVING AND QUALITY OF LIFE AMONG ELDERLY WITH COGNITIVE IMPAIRMENT

Table 4.4.1(a): Comparison of pretest and post-test level of memory score among elderly with cognitive impairment within study and control group.

N=140

Groups	Assessment	Memory Score		Repeated ANOVA test score		Bonferroni t- test		
		Mean	SD	F value	P value	Comparison	Mean Difference	P value
Study	Pretest	45.22	8.29	**480.69**	**0.0001 S*** **	Pre-test Vs Post-test-I	**5.13**	**0.0001 S*** **
	Post-test-I	50.35	9.30			Post-test -I Vs Post-test-II	**4.90**	**0.0001 S*** **
	Post-test-II	55.25	8.42			Pre-test Vs. Post-test-II	**10.03**	**0.0001 S*** **
Control	Pretest	45.90	7.68	3.360	0.069 N.S	Pre-test Vs Post-test-I	0.071	0.175 N.S
	Post-test-I	45.97	7.61			Post-test -I Vs Post-test-II	0.029	0.476 N.S
	Post-test-II	46.00	7.60			Pre-test Vs. Post-test-II	0.100	0.21 N.S

***p<0.001, S – Significant N.S – Not Significant, p>0.05

Table 4.4.1(b): Comparison of pretest and post-test level of memory score among elderly with cognitive impairment between study and control group.

N=140

	Group				Mean Difference	Student independent t-test
	Study		Control			
	Mean	SD	Mean	SD		
Pretest	45.22	8.29	45.90	7.68	0.68	t=0.497, p=0.620 (N.S)
Post Test 1	50.35	9.30	45.97	7.61	4.38	**t=3.052, p=0.003**(S)**
Post Test 2	55.25	8.42	46.00	7.60	9.25	**t=6.824, p=0.0001***(S)**

***p<0.001, **p<0.01, S - Significant N.S – Not Significant, p>0.05

Table 5.4.2(a): Comparison of pretest and post-test level of agitation score among elderly with cognitive impairment within study and control group

N= 140

Groups	Assessment	Agitation		Repeated ANOVA test score		Bonferroni t- test		
		Mean	SD	F value	P value	Comparison	Mean Difference	P value
Study	Pretest	1.18	0.39	**13.30**	**0.0001 S*** **	Pretest Vs Post-test-I	**0.157**	**0.0001 S*** **
	Post-test-I	1.03	0.17			Post-test -I Vs Post-test-II	0.057	0.134 N.S
	Post-test-II	0.97	0.17			Pretest Vs. Post-test-II	**0.214**	**0.0001 S*** **
Control	Pretest	1.20	0.40	1.000	0.321 N.S	Pretest Vs Post-test-I	0.014	0.962 N.S
	Post-test-I	1.18	0.39			Post-test -I Vs Post-test-II	0.000	-
	Post-test-II	1.18	0.39			Pretest Vs. Post-test-II	0.014	0.962 N.S

***p<0.001, S – Significant N.S – Not Significant, p>0.05

Table 5.4.2(b): Comparison of pre-test and post-test level of agitation score among elderly with cognitive impairment between study and control group

N=140

	Group				Mean Difference	Student independent t-test
	Study		Control			
	Mean	SD	Mean	SD		
Pretest	1.18	0.39	1.20	0.40	0.02	t=0.213, p=0.832 (N.S)
Post Test 1	1.02	0.17	1.18	0.39	0.16	**t=3.085, p=0.003**(S)**
Post Test 2	0.97	0.17	1.18	0.39	0.21	**t=4.207, p=0.0001***(S)**

***p<0.001, **p<0.01, S - Significant N.S – Not Significant, p>0.05

Table 5.4.3(a): Comparison of pretest and post-test level of activities of daily living score among elderly with cognitive impairment within study and control group

N=140

Groups	Assessment	BADL		Repeated ANOVA test score		Bonferroni t- test		
		Mean	SD	F value	P value	Comparison	MD	P value
Study	Pretest	35.02	3.52	**53.905**	**0.0001 S*** **	Pretest Vs Post-test-I	**2.514**	**0.0001 S*** **
	Post-test-I	32.51	4.74			Post-test -I Vs Post-test-II	**2.714**	**0.0001 S*** **
	Post-test-II	29.80	5.61			Pretest Vs. Post-test-II	**5.229**	**0.0001 S*** **
Control	Pretest	35.43	2.87	2.423	0.113 N.S	Pretest Vs Post-test-I	0.057	0.962 N.S
	Post-test-I	35.37	2.99			Post-test -I Vs Post test-II	0.086	0.250 N.S
	Post-test-II	35.28	3.13			Pretest Vs. Post-test-II	0.143	0.287 N.S

***p<0.001, S – Significant N.S – Not Significant, p>0.05

Table 5.4.3(b): Comparison of pretest and post-test level of activities of daily living score among elderly with cognitive impairment between study and control group

N=140

	Group				Mean Difference	Student independent t-test
	Study		Control			
	Mean	SD	Mean	SD		
Pretest	35.02	3.52	35.43	2.87	0.41	t=0.737, p=0.462 (N.S)
Post Test 1	32.51	4.74	35.37	2.99	2.86	**t=4.265, p=0.0001***(S)**
Post Test 2	29.80	5.61	35.28	3.13	5.48	**t=7.142, p=0.0001***(S)**

***p<0.001, **p<0.01, S - Significant N.S – Not Significant, p>0.05

Table 5.4.4(a): Comparison of pretest and post-test level of QoL score among elderly with cognitive impairment within study and control group

N=140

Groups	Assessment	QoL		Repeated ANOVA test score		Bonferroni t- test		
		Mean	SD	F value	P value	Comparison	Mean Difference	P value
Study	Pretest	62.27	2.99	**57.154**	**0.0001 S*** **	Pretest Vs Posttest-I	**3.100**	**0.0001 S*** **
	Posttest-I	65.37	5.16			Posttest -I Vs Posttest-II	**4.143**	**0.0001 S*** **
	Posttest-II	69.51	5.89			Pretest Vs. Posttest-II	**7.243**	**0.0001 S*** **
Control	Pretest	62.23	2.75	2.987	0.079 N.S	Pretest Vs Posttest-I	0.057	0.476 N.S
	Posttest-I	62.28	2.81			Posttest -I Vs Posttest-II	0.071	0.287 N.S
	Posttest-II	62.36	2.84			Pretest Vs. Posttest-II	0.129	0.215 N.S

***p<0.001, S – Significant N.S – Not Significant, p>0.05

Table 5.4.4(b): Comparison of pretest and post-test level of QoL scores among elderly with cognitive impairment between study and control group **N=140**

	Group				Mean Difference	Student independent t-test
	Study		Control			
	Mean	SD	Mean	SD		
Pretest	62.27	2.99	62.23	2.75	0.04	t=0.088, p=0.930 (N.S)
Post Test 1	65.37	5.16	62.28	2.81	3.09	**t=4.393, p=0.0001***(S)**
Post Test 2	69.51	5.89	62.36	2.84	8.04	**t=9.153, p=0.0001***(S)**

***p<0.001, S - Significant N.S – Not Significant, p>0.05

SECTION 4.5 CORRELATION BETWEEN THE MEAN DIFFERED LEVEL OF MEMORY, BEHAVIOUR PROBLEMS, ACTIVITIES OF DAILY LIVING AND QUALITY OF LIFE AMONG ELDERLY WITH COGNITIVE IMPAIRMENT IN STUDY AND CONTROL GROUP.

The correlation of post-test-II memory, agitation, activities of daily living and quality of life among elderly with cognitive impairment in the study group. A mild negative correlation was identified between the memory and agitation score ('r'= -0.304), memory and activities of daily living ('r'=-0.319), agitation and quality of life score ('r'= -0.314) and activities of daily living and quality of life ('r'= -0.304). A mild positive correlation was identified between the memory and quality of life score ('r' =0.337) and poor positive correlation was identified between the agitation and activities of daily living ('r'=0.127). It represents that when the level of memory increases their level of agitation score and activities of daily living score decreases moderately. When the quality-of-life score increases their level of agitation score and activities of daily living score decreases moderately.

SECTION 4.6 ASSOCIATION OF SELECTED DEMOGRAPHIC VARIABLES WITH THEIR POST TEST SCORE OF MEMORY, BEHAVIOUR PROBLEMS, ACTIVITIES OF DAILY LIVING AND QUALITY OF LIFE AMONG ELDERLY WITH COGNITIVE IMPAIRMENT IN STUDY AND CONTROL GROUP

Association of posttest-II level of memory score among elderly with cognitive impairment with their selected demographic variables in study group.

The demographic variable such as number of visits of family member (χ^2=13.678, p=0.033) had statistically significant association with posttest-II level of memory score among elderly with cognitive impairment at p<0.01 level and the other demographic variables did not show statistically significant association with posttest-II level of memory score among elderly with cognitive impairment at p<0.05 level in the study group.

Association of posttest-II level of agitation score among elderly with cognitive impairment with their selected demographic variables in study group.

The demographic variable such as period of stay at old age home (χ^2=16.904, p=0.002) had statistically significant association with posttest-II level of agitation among elderly with cognitive impairment at p<0.01 level and the other demographic variables did not show statistically significant association with posttest-II level of agitation score among elderly with cognitive impairment at p<0.05 level in the study group.

Association of posttest-II level of activities of daily living and quality of life score among elderly with cognitive impairment with their selected demographic variables in study group.

The demographic variables did not show statistically significant association with post-test-II level of activities of daily living score among elderly with cognitive impairment in the study group.

CHAPTER 5

RESULTS & DISCUSSION

5.1 Objective 1: To assess the prevalence of cognitive impairment among elderly.

The present study shows that, out of 290 elderly 7(4.8%) elderly had normal cognition, 160 (55.17%) had mild cognitive impairment, 114 (78%) had moderate cognitive impairment and 9 (6.2%) had severe cognitive impairment. In study group 2% had normal cognitive impairment, 50% had mild cognitive impairment, 46% had moderate cognitive impairment, 2% had severe cognitive impairment whereas in control group 2.8% had normal cognition, 61% had mild cognitive impairment, 32.3% had moderate cognitive impairment, 4.2% had severe cognitive impairment.

The above findings are more consistent with the study conducted by **Archana Jayakumar, Bincy AP (2024)** on assessment of cognitive impairment among elderly. Results revealed that 24.2% of elderly had severe cognitive impairment, 30.6% had moderate cognitive impairment and 45.2% had mild cognitive impairment. **Sujitha Pandian et al (2022)** conducted a cross-sectional study on assessment of cognitive impairment and behavioural risk factor among senior citizen living in old age homes in Chengalpattu district, Tamil Nadu. Among 330 study participants around 44% had mild to moderate CI and 36 % had severe CI.

5.2 Objective 2: To assess and compare the pre and post-test level of memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment in experimental and control group.

The present study shows that, In pretest 50(71.4%) of them had average memory and 20(28.6%) had below average memory in study group and 51(72.9%) had average memory and 19(27.1%) had below average memory in control group. The chi-square test reveals that there was no significant difference in the pretest level of memory among the elderly with cognitive impairment between the groups.

In the post-test-II of study group, 44(62%) had average memory, 21(30%) had above average memory and 5(7.1%) had below average memory whereas 51(72.9%) had average memory and 19(27.1%) had below average memory in control group. The findings revealed that there was a statistically significant difference in the post-test-II level of memory among the elderly with cognitive impairment between the groups.

The present study results were consistent with the findings of the following studies carried out by **Dhanya George, Anu Jacob Kachapilli (2020)** on assessment of level of memory impairment among elderly. 36 % had mild memory impairment 7% had moderate memory impairment and 2.5% had severe memory impairment. **Ghassan Ibraham, Fatima Kuriet (2024)** on assessment of level of memory among elderly individuals residing in nursing homes in lattakia city. The study result shows that half of the elderly had weak level of memory**.**

The assessment of pretest and post-test level of behavioural problems among elderly with cognitive impairment. In pretest and In the post-test-II, 68(97.1%) of elderly had mild agitation and only 2(2.9%) had no significant agitation in study group whereas 70(100%) had mild agitation in control group. The findings revealed that there was a statistically significant difference in the post-test-II level of agitation among the elderly with cognitive impairment between the groups.

The present study results were consistent with the findings of the following studies carried out by **Jiaxin Liu (2023)** conducted a study on risk factors for agitation among Chinese older adults. 42.8% of the sample exhibits one or more agitated behaviours and found basic health issues such as activities of daily living and family support issues.

The assessment and comparison of pretest and post-test level of activities of daily living among elderly with cognitive impairment. In pretest 63(90%) in the study group and 67(95.7%) in the control group were partially dependent on others for activities of daily living.. In the post-test-II, 66(92.9%) of the elderly were partially dependent and 5(7.1%) were totally independent in performing their activities of daily living in the study group whereas in the control group, 67(95.7%) of them were partially dependent on others for activities of daily living. The findings revealed that there was a statistically significant difference in the post-test-II level of activities of daily living among the elderly with cognitive impairment between the groups.

The present study results were consistent with the findings of the following studies carried out by **Shekhar Chauhan (2022)** on prevalence and determinants of activity of daily living among elderly in India. Around 6% elderly reported severe ADL. Another study conducted by **Preeti Usha, Surekha Kishore, Mahendra Singh (2020)** regarding assessment of ADL in elderly population. 112 (28%) study population were found to be physically dependent for their daily activities and out of them 63.39% had moderate to severe dependency.

The assessment and comparison of pretest and post-test level of quality of life among elderly with cognitive impairment. In pretest 70(100%) of elderly had average quality of life in both study and control group. The chi-square test reveals that there was no significant difference in the pretest level of quality of life among the elderly with cognitive impairment between the groups. In post-test-I, 41(58.6) and 29(41.4%) of the elderly had good and average QoL in study group whereas in the control group 69(98.6%) and 1(1.4%) of them had average and good QoL. The chi-square test reveals that there was a significant difference in the post-test I level of quality of life among the elderly with cognitive impairment between the groups. In post-test-II, 11(15.7%) and 59(84.3%) of the elderly had average and good QoL in study group whereas in the control group 69(98.6%) and 1(1.4%) of them had average and good QoL.

The present study results were consistent with the findings of the following studies carried out by **Lokare PO, Dr Karanjekar VP (2022)** on assessment of quality of life among elderly population residing at old age homes. The results showed that means and SD for environmental domain score of QOL was 42. 1569 +/- 19.28 which was lower as compared to physical, social and psychological domain score.

5.3 Objective 3: To evaluate the effectiveness of cognitive behaviour therapy on memory, behaviour problems, activities of daily living and quality of life among elderly with cognitive impairment.

The comparison of pretest, post-test-I and post-test-II level of memory score among elderly with cognitive impairment within study and control group. In pretest mean memory score was 45.22 and post-test-II mean memory score was 55.25 in study group whereas in control group, the pretest mean memory score was 45.90 and post-test-II mean memory score was 46. In multiple comparison of Bonferroni t-test reveals that the mean difference score was 10.03, which showed statistically very high level of significant difference between the pretest, post- test-I and post-test-II in the study group at $p<0.001$. However, there was no statistical difference between the pretest, post- test-I and post- test-II in the control group.

The comparison of pretest, post-test-I and post-test-II level of agitation score among elderly with cognitive impairment within study and control group. In pretest mean agitation score was 1.18 and post-test-II mean agitation score was 0.97 in study group whereas in control group, the pretest mean agitation score was 1.20 and post-test-II mean agitation score was 1.18. In multiple comparison of Bonferroni t-test reveals that the mean difference score was 0.214, which showed statistically very high level of significant difference between the pretest, post- test-I and post-test-II in the study group at $p<0.001$. However, there was no statistical difference between the pretest, post-test-I and post- test-II in the control group.

The comparison of pretest, post-test-I and post-test-II level of activities of daily living score among elderly with cognitive impairment within study and control group. In pretest mean activities of daily living score was 35.02 and post-test-II mean activities of daily living score was 29.80 in study group whereas in control group, the pretest mean activities of daily living score was 35.43 and post-test-II mean activities of daily living score was 35.28. In multiple comparison of Bonferroni t-test reveals that the mean difference score was 5.229, which showed statistically very high level of significant difference between the pretest, post - test-I and post-test-II in the study group at $p<0.001$. However, there was no statistical difference between the pretest, post- test-I and post -test-II in the control group.

The comparison of pretest, post-test-I and post-test-II level of quality-of-life score among elderly with cognitive impairment within study and control group. In pretest mean quality of life score was 62.27 and post-test-II mean quality of life score was 69.51 in study group whereas in control group, the pretest mean quality of life score was 62.23 and post-test-II mean activities of daily living score was 62.36. In multiple comparison of Bonferroni t-test reveals that the mean difference score was 7.243, which showed statistically very high level of significant difference between the pretest, post- test-I and post-test-II in the study group at $p<0.001$. However, there was no statistical difference between the pretest, post- test-I and post- test-II in the control group.

The present study results are consistent with the findings of the following studies carried out by **AnQ, Wang K, Sun F, Zhang (2020)** regarding CBT on mild cognitive impairment among Chinese older adults. 82 older adults were recruited from 4 old age homes were randomly assigned to either intervention or control group. The intervention group N= 48 received 8 weekly 60 minute face to face CBT while the control group n= 38 received treatment as usual. Result showed that the modified group CBT has significantly reduced mild cognitive impairment at $p<0.001$.

Cai Gillis et al (2020) conducted a study to assess the effectiveness of cognitive behavior therapy program for improving mood and quality of life in an older woman with mild cognitive impairment in California and the results revealed that mood and quality of life was improved. **Dharmayati Bambang Utoyo et al (2018)** conducted a feasibility study of cognitive behavioral therapy as an intervention for mild cognitive impairment in elderly Indonesians and the results revealed that Cognitive Behavior Therapy is a feasible treatment strategy for reducing the mild cognitive impairment symptoms and reduces the risk of Alzheimer's Disease.

This is represented by the first null hypothesis **NH_1 "There is no significant effect of cognitive behavior therapy on memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment."** was **rejected** to the study group.

5.4 Objective 4: To identify the relationship between the memory, behaviour problems, activities of daily living and quality of life among elderly with cognitive impairment in experimental and control group.

The correlation of post-test-I and post-test-II scores of memory, agitation, activities of daily living and quality of life among elderly with cognitive impairment in the study and control group. In post- test I PGI Memory Vs Agitation with mean score and SE of 50.35 +/- 9.30 and 1.30+/- 0.17 showed significant mild negative correlation and in post- test II shows not significant correlation in study group. In Post test I PGI Memory vs BADL with mean score & SE of 50.35+/- 9.30 and 32.51 +/- 4.73 whereas post –test II PGI vs BADL showed significant mild negative correlation in study group. In Post test I of PGI vs QOL with mean score & SE 50.35+/- 9.30 and 63.37 +/- 5.16 showed significant mild positive correlation whereas post-test II PGI & QOL showed significant mild positive correlation in study group.

In post- test I of PAS vs BADL with mean score of 1.03 +/- 0.17 and 32.51 +/- 4.73 showed not significant, poor positive correlation whereas post-test II score of 0.97+/- 0.17 and 29.80+/- 5.60 shows significant mild positive correlation. In post- test I of PAS vs QOL with mean score of 1.03 +/- 0.17 and 65.37 +/- 5.16 showed significant mild negative correlation whereas post- test II score

of PAS vs QOL 0.97 +/-0.17 and 69.51+/- 5.89 showed significant mild negative correlation. In post-test I of BADL vs QOL with mean score of 32.51 +/- 4.73 and 65.37 +/- 5.16 showed significant mild negative correlation whereas post-test II level of BADL vs QOL showed significant mild negative correlation.

The present study results are consistent with the findings of the following studies carried out by **Radhika Vishveshwar et al (2023)** on correlation of cognitive status and quality of life in elderly residents of old age homes. The findings showed a moderate positive and significant correlation between memory and QOL. Another study conducted by **Sony Simon, Kurinji Chelvan (2024)** on correlation between cognitive function and quality of life among elderly people living in residential care home. There was a positive correlation at P< 0.05 between MOCA scale and WHOQOL BREF scoring.

This is represented by the second null hypothesis **NH2: There is no significant relationship between the mean difference level of memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment** was **rejected.**

5.5 Objective 5: To associate the post test score of memory, behaviour problems, activities of daily living and quality of life among elderly with their selected demographic variables.

The association of post-test-II level of memory, agitation, activities of daily living and quality of life among elderly with cognitive impairment with their selected demographic variables in study group. The demographic variable such as number of visits of family member (χ^2=13.678, p=0.033) had statistically significant association with posttest-II level of memory score among elderly with cognitive impairment at p<0.01 level and the other demographic variables did not show statistically significant association with posttest-II level of memory score among elderly with cognitive impairment at p<0.05

level in the study group.The demographic variable such as period of stay at old age home (χ^2=16.904, p=0.002) had statistically significant association with posttest-II level of agitation among elderly with cognitive impairment at p<0.01 level and the other demographic variables did not show statistically significant association with posttest-II level of agitation score among elderly with cognitive impairment at p<0.05 level in the study group.

The present study results are consistent with the findings of the following studies carried out by **Sujitha Pandian (2024)** on social factors influence the utilization of old age homes by elderly in urban area of south Chennai. The study results showed that 13% insisted by children and relatives to stay in old- age homes and strongly associated factors. 24% who were not willing to stay in old age home and wished to stay either with their children or relatives and 70% of the elderly were left unattended (not frequent visits) by family or friends**.** This is represented by the third null hypothesis **NH3 "There is no significant association of selected demographic variables with their memory, behavioral problems, activities of daily living and quality of life among elderly with cognitive impairment"** was rejected to the study group.

CHAPTER 6

SUMMARY, CONCLUSION, RECOMMENDATIONS & LIMITATIONS

6.1 SUMMARY

Cognitive Behaviour Therapy (CBT) is an effective and simple intervention by creating relaxing states through mental processes. It is a safe, non - pharmacological approach and can be easily followed by the elderly. It has no side effects and is well accepted and self-practiced by them in the other parts of the world. Hence the researcher was interested to evaluate the effectiveness of Cognitive Behaviour Therapy on reduction of memory and behavior problems and improvement of activities of daily living and quality of life among elderly with cognitive impairment at selected old age homes.

6.2 CONCLUSION

Cognitive Behaviour Therapy is found to be more effective on improving the level of memory, activities of daily living, reducing the behavioural problems and promotes the quality of life among elderly with cognitive impairment. This study also found that there was a substantial improvement in memory, activities of daily living, quality of life and reducing the behavioural problems of elderly with cognitive impairment. This intervention is simple and can be integrated to the daily routine of old-age people especially when they are in the old age home. This in turn improves the quality of life of the old age people.

6.3 STRENGTHS OF THE STUDY

1. The feasibility and success of the study were also greatly aided by the favourable environment, the patient's willingness to engage in the interventional programs, and their adherence during the training period.
2. Researcher could manage to follow up the required participants till the final post- test meeting the attrition.
3. A well planned intervention for 2 months delivered based on robust review of literature.
4. A good team work involving the principal investigator, participants of the study and old age home in-charges.

6.4 LIMITATIONS OF THE STUDY

The study findings

1. Data was collected from only selected old age homes of Chengalpattu District.
2. Therapy was administered by researcher herself.

3. Only PGI memory scale, Pittsburgh agitation scale, Bristol Activities of daily living and WHOQOL scale were used to assess the effectiveness of cognitive behavioural therapy.

4. The study included only elderly with cognitive impairment between mild to moderate.

6.5 RECOMMENDATIONS OF THE STUDY

- A comparative study can also be done to compare the effectiveness of cognitive behaviour therapy with other therapies such as rational emotive behaviour therapy, dialectical behaviour therapy and multimodal therapy.

- A similar study can be conducted as comparative study between elderly residing in old-age home and elderly residing in their homes.

- A similar study can be conducted with other variables such as depression, anxiety, stress.

- A similar study can be conducted between male and female elderly residing in old-age home.

- A similar study can be done in geriatric wards who got admitted in the hospital set up.

6.6 IMPLICATIONS OF THE STUDY

Nursing Practice

- ❖ This study finding will create awareness among the nurses about the cognitive behaviour therapy and its uses for various mental health problems.
- ❖ It helps to understand the effectiveness of teaching elderly about the activities and will improve the quality of life among elderly in the old age home and in the geriatric ward.
- ❖ It will help the nursing personnel to be in the best position to impart health education to the people in the old age homes or in any community set up which strengthens the community psychiatry.

Nursing Education

- ❖ The concepts of CBT are the one of the psychotherapies and they were already included in the revised nursing curriculum as a module for undergraduate programme and postgraduate programme and extended to practical training and exposure on cognitive behaviour therapy can be incorporated in community psychiatry.

- ❖ Nursing students should made well acquainted with Cognitive Behaviour Therapy and which can be made an integral part of geriatric nursing.

Nursing Administrator

- ❖ Nursing administrators can prepare protocols and necessary policies to promote CBT in the geriatric ward and to willing participate in outreach programmes in the community thus strengthening the community psychiatry and also essential administrative support should be provided to conduct such activities.
- ❖ Nurse administrators must organize Continuing Nursing Education program to the nurse's working in outreach areas and communities to enable them to keep abreast with current knowledge regarding Cognitive Behaviour therapy.

Nursing research

- ❖ Extensive research must be conducted in this area to identify several effective methods of therapies.
- ❖ This study brings about the facts that more studies need to be done at different settings, which are culturally acceptable, using various therapies.
- ❖ This study can be a baseline and can be inspired by other investigators to carry out further studies.

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